



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,931	06/05/2001	David A. Spear	3600.100-Cont.	3517

7590

11/19/2002

David M. Quinlan PC
40 Nassau Street
Princeton, NJ 08542

EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT

PAPER NUMBER

3745

DATE MAILED: 11/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/874,931

Applicant(s)

SPEAR ET AL.

Examiner

Christopher Verdier

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6-5-01, 7-23-02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 11, 13-20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 11, 13-20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 3745

Receipt and entry of Applicants' Preliminary Amendments dated June 5, 2001 and July 23, 2002 is acknowledged. It is noted that claims 1-3 have been canceled by Applicants in the Amendment dated June 5, 2001. Claims 10-11, 13-20, and 22-23 are pending. Applicants' Terminal Disclaimer filed on September 19, 2002 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of application 09/343,736 has been reviewed and is accepted. The terminal disclaimer has been recorded. Applicants' Supplemental Reissue Declaration dated October 11, 2002 has been reviewed and is defective as set forth later below.

With regard to Applicants' request that the examiner contact Applicants' Attorney by telephone if any issues remain to be resolved, the issues set forth below are numerous and appear not to be readily resolvable by telephone.

Surrender of Original Patent

Applicants should provide a statement on a separate sheet that the original patent has been surrendered in reissue application 09/343,736.

Reissue Declaration

The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following:

It does not state the citizenship of the legal representative. See MPEP 605.04(a)

Art Unit: 3745

Claims 10-11, 13-20, and 22-23 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10-11, 13-20, and 22-23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has essentially copied the claims of U.S. Patent 6,071,077 in the instant application. By amending the claims of the instant application such that they are essential copies of the claims of U.S. Patent 6,071,077, Applicants have introduced new matter into the claims of the instant application, because there is no support in the original specification (application number 08/559,965) for numerous limitations, which are set forth below. Claim 10, lines 2-3 recite that the fan casing has an inner duct wall which in a fan rotor region (emphasis added) is convergent in the downstream direction. There is no support in the original specification for this feature and this is new matter. The original specification makes no mention of the term "convergent", and does not describe

Art Unit: 3745

figures 1-7 as being drawn to scale. Figures 1-2 and 6 show duct 42 which has an upstream portion which narrows as one proceeds along the axial direction, however the narrowing terminates ahead of the fan rotor 22, 122. Claim 10, lines 5-6 recite that the fan blades have a tip profile which in revolution substantially corresponds to the convergent duct wall. There is no support in the original specification for this feature and this is new matter. As seen in figures 1-2 and 6, the tip profile 26, 126 is linear, and has no convergence whatsoever. In revolution, the tip profile is also linear and has no convergence whatsoever. As seen in figure 2, the duct 42 has an abradable rubstrip 46 which is linear. The gap between the blade tip 26 and the rubstrip 46 is of a constant radial height as the tip is traversed from the leading edge 28 to the trailing edge 30 at the tip. As seen in figure 6, the gap between the blade tip 126 and the unnumbered duct is of a constant radial height as the tip is traversed from the leading edge 128 to the trailing edge 130 at the tip. Claim 10, lines 10-12 recite that a third height region is translated forward relative to the leading edge at the second intermediate radius. There is no support in the original specification for this feature and this is new matter. As seen in figure 2, and described in the specification, the tip region of the blade, compared to the rest of the blade, is not translated forward relative to the leading edge at the second intermediate radius 70/74. One of ordinary skill in the art would not consider the tip of the blade of figure 2 to be translated forward. Claim 10, last two lines recite that the stagger angle increases progressively with blade height. The original specification makes no mention of any stagger angle, and figures 1-7 do not disclose any stagger angle, nor a stagger angle that increases progressively with blade height. Therefore, the recitation of the stagger angle increasing progressively with blade height is new matter.

In claim 11, lines 2-3 which recite that stagger angle increases to less than 90 degrees at the tip relative to the airflow direction, are new matter. There is no support in the original specification for this limitation. In claim 14, lines 3-4, the recitation of the stagger angle of the mid-height region of the blade being a predetermined fraction of the stagger angle at the tip region is new matter because there is no support for this limitation in the original specification. In claim 15, lines 2-5, the recitation of the sweep angle of the leading edge of a swept fan blade at a point on the leading edge being less than the complement of the angle of a Mach cone at any other point on the leading edge of the blade at greater radius from the root is new matter, because there is no support in the original specification for this limitation. In claim 16, lines 2-8, the recitation of the shape of the pressure surface of a swept fan blade and the suction surface thereof creating, in use, a line of minimum static pressure points on the suction surface of the blade, with the line of minimum static pressure points being inclined with respect to the axial direction at a sweep angle which varies with span height of the blade, and having a negative value in a region of subsonic flow over the leading edge is new matter, because there is no support in the original specification for this limitation. In claim 17, lines 2-5, the recitation of the sweep angle of the line of minimum pressure points at a point on the line being less than the complement of the angle of a Mach cone at any other point on the line is new matter, because there is no support in the original specification for this limitation.

In claim 18, lines 1-2, the recitation of the fan stage being at least in part rotatable about an axis of rotation is new matter, because there is no support in the original specification for the fan stage being at least in part (emphasis added) rotatable about an axis of rotation. In claim 18,

Art Unit: 3745

lines 4-5, the recitation of the inner duct wall of the fan casing at the fan rotor region being convergent is new matter for the reasons set forth above. In claim 18, lines 9-10, the recitation of the tip profile substantially corresponding to the convergent inner duct wall of the fan casing is new matter as set forth above. In claim 18, lines 17-19, the recitation of the outer region being translated forward relative to the leading edge at an outward boundary of the intermediate region is new matter as set forth above, with regard to claim 10, lines 10-12. In claim 19, lines 2-3, the recitation of the intermediate region (which is defined in claim 18 as defining a rearward sweep angle) extending further than the inner region along the axis of rotation is new matter, because there is no support in the original specification for this limitation. As seen in figure 2, the intermediate region 70 does not extend further than the inner region near 40 along the axis of rotation. In claim 20, lines 1-3, the recitation of the inner duct wall of the fan casing at the fan rotor being substantially convergent in the downstream direction is new matter for the reasons set forth above.

In claim 23, lines 1-2, the recitation of the fan stage being at least in part rotatable about an axis of rotation is new matter, because there is no support in the original specification for the fan stage being at least in part (emphasis added) rotatable about an axis of rotation. In claim 23, lines 4-5, the recitation of the inner duct wall of the fan casing at the fan rotor region being convergent is new matter for the reasons set forth above. In claim 23, lines 1-12, the recitation of the tip profile substantially corresponding to the convergent inner duct wall of the fan casing is new matter as set forth above. In claim 23, lines 19-21, the recitation of outer region being translated forward relative to the leading edge at an outward boundary of the intermediate region

Art Unit: 3745

to provide a sweep angle that causes the blade to intercept the shock is new matter as set forth above, with regard to claim 10, lines 10-12.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-11, 13-20, and 22-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 10, lines 2-3, the recitation of the fan casing having an inner duct wall which in a fan rotor region (emphasis added) is convergent in the downstream direction is inaccurate, because the inner duct wall is not convergent in the downstream direction in a fan rotor region. The original specification makes no mention of the term "convergent", and does not describe figures 1-7 as being drawn to scale. Figures 1-2 and 6 show duct 42 which has an upstream portion which narrows as one proceeds along the axial direction, however the narrowing terminates ahead of the fan rotor 22, 122. In claim 10, lines 5-6, the recitation of the fan blades having a tip profile which in revolution substantially corresponds to the convergent duct wall is inaccurate, because the fan blade tip profile is not convergent, and does not correspond to a convergent duct wall. The original specification makes no mention of this feature. As seen in figures 1-2 and 6, the tip profile 26, 126 is linear, and has no convergence whatsoever. In revolution, the tip profile is also linear and has no convergence whatsoever. As seen in figure 2, the duct 42 has an abradable rubstrip 46 which is linear. The gap between the blade tip 26 and the rubstrip 46 is of a constant radial height as the tip is traversed from the leading edge 28 to the trailing edge 30 at the tip. As seen in figure 6, the gap between the blade

Art Unit: 3745

tip 126 and the unnumbered duct is of a constant radial height as the tip is traversed from the leading edge 128 to the trailing edge 130 at the tip. In claim 10, line 6, "substantially corresponds" is indefinite. When a word of degree such as "substantially" is used in a claim, it must be determined whether the underlying specification provides some standard or guideline for measuring that degree, such that a person of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. *Seattle Box Co. V. Industrial Crating & Packing Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 574 (fed. Cir. 1984). In the specification, there are no standards or guidelines for measuring the scope of the term "substantially corresponds". In claim 10, lines 10-12, the recitation of a third height region that is translated forward relative to the leading edge at the second intermediate radius is inaccurate. There is no support in the original specification for this feature. As seen in figure 2, and described in the specification, the tip region of the blade, compared to the rest of the blade, is not translated forward relative to the leading edge at the second intermediate radius 70/74. One of ordinary skill in the art would not consider the tip of the blade of figure 2 to be translated forward. In claim 10, the last two lines, the recitation of the stagger angle increasing progressively with blade height is inaccurate. The original specification makes no mention of any stagger angle, and figures 1-7 do not disclose any stagger angle, nor a stagger angle that increases progressively with blade height.

In claim 11, lines 2-3, the recitation of the stagger angle increasing to less than 90 degrees at the tip relative to the airflow direction is inaccurate. There is no support in the original specification for this limitation. In claim 11, lines 2-3, "the airflow direction" lacks

Art Unit: 3745

antecedent basis. In claim 14, lines 3-4, the recitation of the stagger angle of the mid-height region of the blade being a predetermined fraction of the stagger angle at the tip region is inaccurate because as set forth above, there is no blade stagger angle, and there is no stagger angle of the mid-height region of the blade that is a predetermined fraction of the stagger angle at the tip region. In claim 15, lines 2-5, the recitation of the sweep angle of the leading edge of a swept fan blade at a point on the leading edge being less than the complement of the angle of a Mach cone at any other point on the leading edge of the blade at greater radius from the root is inaccurate, because the original specification does not disclose this limitation. In claim 15, line 3, "a swept fan blade" is unclear and appears to be a double recitation. In claim 16, lines 2-8, the recitation of the shape of the pressure surface of a swept fan blade and the suction surface thereof creating, in use, a line of minimum static pressure points on the suction surface of the blade, with the line of minimum static pressure points being inclined with respect to the axial direction at a sweep angle which varies with span height of the blade, and having a negative value in a region of subsonic flow over the leading edge is inaccurate, because there is no support in the original specification for this limitation. In claim 16, line 2, "the pressure surface" lacks antecedent basis. In claim 16, line 3, "a swept fan blade" is unclear and appears to be a double recitation. In claim 16, line 3, "the suction surface" lacks antecedent basis. In claim 17, lines 2-5, the recitation of the sweep angle of the line of minimum pressure points at a point on the line being less than the complement of the angle of a Mach cone at any other point on the line is inaccurate, because there is no support in the original specification for this limitation.

Art Unit: 3745

In claim 18, lines 1-2, the recitation of the fan stage being at least in part rotatable about an axis of rotation is inaccurate, because the fan stage is fully rotatable about an axis of rotation, and not at least in part (emphasis added) rotatable about an axis of rotation. In claim 18, lines 4-5, the recitation of the inner duct wall of the fan casing at the fan rotor region being convergent is inaccurate for the reasons set forth above. In claim 18, lines 9-10, the recitation of the tip profile substantially corresponding to the convergent inner duct wall of the fan casing is inaccurate as set forth above. In claim 18, line 9, "substantially corresponds" is indefinite. When a word of degree such as "substantially" is used in a claim, it must be determined whether the underlying specification provides some standard or guideline for measuring that degree, such that a person of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. *Seattle Box Co. V. Industrial Crating & Packing Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 574 (fed. Cir. 1984). In the specification, there are no standards or guidelines for measuring the scope of the term "substantially corresponds". In claim 18, lines 17-19, the recitation of the outer region being translated forward relative to the leading edge at an outward boundary of the intermediate region is inaccurate as set forth above, with regard to claim 10, lines 10-12. In claim 19, lines 2-3, the recitation of the intermediate region (which is defined in claim 18 as defining a rearward sweep angle) extending further than the inner region along the axis of rotation is inaccurate, because there is no support in the original specification for this limitation. As seen in figure 2, the intermediate region 70 does not extend further than the inner region near 40 along the axis of rotation. In claim 20, lines 1-3, the recitation of the inner duct wall of the fan casing at the fan rotor being substantially convergent in the downstream direction is inaccurate for the reasons set forth above. In claim 20, line 3, "substantially convergent" is

Art Unit: 3745

indefinite. When a word of degree such as "substantially" is used in a claim, it must be determined whether the underlying specification provides some standard or guideline for measuring that degree, such that a person of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. *Seattle Box Co. V. Industrial Crating & Packing Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 574 (fed. Cir. 1984). In the specification, there are no standards or guidelines for measuring the scope of the term "substantially convergent".

In claim 23, lines 1-2, the recitation of the fan stage being at least in part rotatable about an axis of rotation is inaccurate, because the fan stage is fully rotatable about an axis of rotation, and not at least in part (emphasis added) rotatable about an axis of rotation. In claim 23, lines 4-5, the recitation of the inner duct wall of the fan casing at the fan rotor region being convergent is inaccurate for the reasons set forth above. In claim 23, lines 11-12, the recitation of the tip profile substantially corresponding to the convergent inner duct wall of the fan casing is inaccurate as set forth above. In claim 23, line 11, "substantially corresponds" is indefinite. When a word of degree such as "substantially" is used in a claim, it must be determined whether the underlying specification provides some standard or guideline for measuring that degree, such that a person of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. *Seattle Box Co. V. Industrial Crating & Packing Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 574 (fed. Cir. 1984). In the specification, there are no standards or guidelines for measuring the scope of the term "substantially corresponds". In claim 23, lines 19-21, the recitation of the outer region being translated forward relative to the leading edge at an

Art Unit: 3745


outward boundary of the intermediate region is inaccurate as set forth above, with regard to claim 10, lines 10-12.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

C.V.
November 18, 2002


Christopher Verdier
Primary Examiner
Art Unit 3745